

Claims

- [c1] 1. An apparatus for positioning a window in a vehicle having a mounting surface, the apparatus comprising: a lift mechanism disposed on the mounting surface, the lift mechanism configured to move the window between a raised position and a lowered position; and a strut having a first end disposed on the mounting surface and a second end adapted to engage the window; wherein the strut biases the window toward the raised position.
- [c2] 2. The apparatus of claim 1 wherein the lift mechanism further comprises a guide track configured to be attached to the mounting surface, a carriage movably coupled to the guide track, and a link connected to the carriage at a lower end and connected to the window at an upper end.
- [c3] 3. The apparatus of claim 2 further comprising a window bracket connected to the window wherein the link and the strut are pivotally connected to the window bracket.
- [c4] 4. The apparatus of claim 2 wherein the carriage further has a roller for engaging the guide track.

- [c5] 5. The apparatus of claim 2 wherein the guide track has a plurality of external surfaces and the carriage has a plurality of rollers, the plurality of rollers configured such that at least one roller engages each external surface of the guide track.
- [c6] 6. The apparatus of claim 2 wherein the carriage further has first and second sides, the roller being disposed proximate the first side and the link being disposed proximate the second side.
- [c7] 7. The apparatus of claim 1 wherein the window further has a first layer and a second layer.
- [c8] 8. The apparatus of claim 7 wherein the first layer includes a projection that extends past the second layer, the projection including a narrow portion adapted to slide within a channel disposed on the vehicle.
- [c9] 9. An apparatus for positioning a window disposed in a closure of a vehicle, the closure including a channel for receiving a portion of the window and a mounting surface, the apparatus comprising:
 - a guide track configured to be attached to the mounting surface;
 - a carriage having a plurality of rollers adapted to engage the guide track;

a link connected to the carriage at a first end and connected to a first window bracket at a second end; and an actuator for moving the carriage along the guide track;

wherein the plurality of rollers roll along the guide track to move the window between a raised position and a lowered position.

- [c10] 10. The apparatus of claim 9 further comprising a first strut attached to the first window bracket and a second strut attached to a second window bracket.
- [c11] 11. The apparatus of claim 9 wherein the window includes a plurality of layers.
- [c12] 12. The apparatus of claim 11 wherein the window includes first and second layers, the first layer including a projection that extends past an edge of the second layer.
- [c13] 13. The apparatus of claim 12 wherein the projection further comprises a narrow portion configured to slide within the channel.
- [c14] 14. The apparatus of claim 12 further comprising an edge treatment disposed proximate the edge of the second layer and configured to inhibit moisture intrusion between the plurality of layers.

[c15] 15. An apparatus for raising and lowering a window disposed in a door of a vehicle, the door having a door body, the apparatus comprising:

- a guide track configured to be attached to the door body;
- a carriage including a plurality of rollers, the rollers being configured to engage the guide track;
- a link attached to the carriage at a first end and adapted to engage the window at a second end;
- a window regulator assembly adapted to move the carriage between a raised position and a lowered position;
- and
- a strut attached to the door body at a first end and adapted to engage the window at a second end; wherein the strut is configured to bias the window toward the raised position.

[c16] 16. The apparatus of claim 15 wherein the plurality of rollers are configured in pairs such that pairs of rollers are disposed on opposing surfaces of the guide track.

[c17] 17. The apparatus of claim 15 wherein the link is pivotally attached to the carriage by a pin.

[c18] 18. The apparatus of claim 17 further comprising a window release assembly, the window release assembly including a release cable attached at an end to the pin,

wherein application of sufficient force on the release cable disengages the pin and allows the window to move independent of the carriage.

- [c19] 19. The apparatus of claim 18 further comprising a release cable guide, the release cable guide disposed proximate the strut and including a passage through which the release cable passes.
- [c20] 20. The apparatus of claim 18 further comprising an aperture disposed in the door and a locking pin configured to be inserted in the aperture, wherein insertion of the locking pin inhibits movement of the window.